DOCUMENT RESUME

ED 173 339 SP 014 463

AUTHOR Brophy, Jere E.
TITLE Using Observation to Improve Your Teaching. Occasional Paper No. 21.
INSTITUTION Michigan State Univ., East Lansing. Inst. for Research on Teaching.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Apr 79
CONTRACT 400-76-0073
NOTE 18p.
AVAILABLE FROM Institute for Research on Teaching, College of Education, Michigan State University, 252 Erickson Hall, East Lansing, Michigan 48824 ($1.50)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Class Management; Class Organization; *Classroom Observation Techniques; Feedback; *Peer Evaluation; Student Attitudes; Student Teacher Relationship; *Teacher Attitudes; *Teacher Behavior; *Teacher Improvement; Teaching Methods

ABSTRACT

The value of constructive classroom observation in improving teachers' behavior and classroom management is pointed out, and a method of providing this observation is suggested. It is recommended that teachers working as a group observe each other's classrooms. Teachers who differ in experience and expertise can, by this means, make contributions and assistance by providing feedback to each other. The following principles are offered for use in observation: feedback should (1) involve specific, concrete behaviors or characteristics; (2) be credible and presented with good intentions and in understandable terms; (3) include specific guidelines for change; and (4) lead to a commitment to initiate specific changes. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED173339

Occasional Paper No. 21

USING OBSERVATION TO IMPROVE YOUR TEACHING

Jere E. Brophy

Published By

The Institute for Research on Teaching
252 Erickson Hall
Michigan State University
East Lansing, Michigan 48824

April 1979

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jere E. Brophy

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

SP 014 463

This work is sponsored in part by the Institute for Research on Teaching, College of Education, Michigan State University. The Institute for Research on Teaching is funded primarily by the Teaching Division of the National Institute of Education, United States Department of Health, Education, and Welfare. The opinions expressed in this publication do not necessarily reflect the position, policy, or endorsement of the National Institute of Education. (Contract No. 400-76-0073)

Institute for Research on Teaching

Teachers' thoughts and decisions are the focus of studies currently under way at Michigan State University's Institute for Research on Teaching (IRT). The IRT, founded in April 1976 with a $3.6 million grant from the National Institute of Education, has major projects investigating teacher decision-making, including studies of reading diagnosis and remediation, classroom management strategies, instruction in the areas of language arts, reading, and mathematics, teacher education, teacher planning, effects of external pressures on teachers' decision, and teachers' perceptions of student affect. Researchers from many different disciplines cooperate in IRT research. In addition, public school teachers work at IRT as half-time collaborators in research, helping to design and plan studies, collect data, and analyze results. The Institute publishes research reports, conference proceedings, occasional papers, and a free quarterly newsletter for practitioners. For more information or to be placed on the IRT mailing list please write to: The IRT Editor, 252 Erickson, MSU, East Lansing, Michigan 48824.

Director: Lee S. Shulman

Associate Director: Judith E. Lanier

Editorial Staff:

Lawrence W. Lezotte, coordinator of Communications/Dissemination
Linda Shalaway, IRT editor
James Kern, editorial assistant
Janice Behrs, editorial assistant

Using Observation to Improve Your Teaching[1]

Jere E. Brophy[2]

Philip Jackson (1968), in Life in Classrooms, pointed out that classrooms are very busy places, especially for teachers, who share hundreds of interactions with their students each day. Most teachers are too busy coping with the demanding pace of classrooms to have much time to monitor or reflect upon their behavior, so much of their behavior is habitual and not deliberate. It consists of *automatic responses* developed to handle recurring classroom situations. Such teacher behavior can persist indefinitely without evaluation or revision even where it is inappropriate, because teachers are not aware of it and their students do not provide feedback about it (especially preschool and primary grade students who cannot analyze and articulate the basis for a problem even when they recognize that something is wrong).

Tom Good and I became impressed with the pervasiveness of this problem while studying the relationships among teacher expectations and attitudes, teacher-student relationships, and student attitudes and learning progress (summarized in Brophy & Good, 1974, and Good & Brophy, 1977, 1978). Study after study yielded similar results: Certain teachers were consistently more effective than others, not because they pursued different goals or used opposing methods, but because they were more thorough and systematic in their teaching. They planned and prepared carefully, and thus were able to structure their classrooms to

---

[1]This paper is scheduled for publication in Young Children, April/May 1979 issue.

[2]Jere E. Brophy is a senior researcher in the Institute for Research on Teaching and a professor of educational psychology and teacher education.

initiate the kinds of activities and interactions they desired. Also, because these teachers were aware of what they were trying to accomplish and how they were intending to do it, they were able to monitor their own progress more or less continuously. This helped them to concentrate on activities that fostered major objectives, and to promote these objectives even when responding to unanticipated events. We called these teachers *proactive* to indicate that they assumed and maintained the initiative in structuring classroom events.

Less effective teachers, we found, were mostly *reactive*. Lacking clarity about objectives and methods for reaching them, these teachers seemed less "in charge" in their classrooms. Much of their time was spent unsystematically reacting to unanticipated situations and student initiatives, seemingly without much conscious awareness of their behavior or its implications. Interviews with such teachers typically revealed little awareness of how they responded when a student failed to recite or volunteered an incorrect answer, for example, or how they decided it was time to move from one part of the lesson to the next. Yet, most such teachers had predictable habits that were clear to classroom observers.

We found that feedback based on our classroom observations could make teachers aware of problems and help bring about change.

Sometimes, feedback alone is sufficient. For example, perhaps 10% of teachers working in the early elementary grades use an inappropriate physical arrangement for their reading groups. They place students in the reading group with their backs to a wall or the corner, so that these students are facing the rest of the class, and vice versa, which makes for frequent distractions. Furthermore, the teachers themselves

must face the students in the reading groups, which means that their backs are turned to the rest of the class. This leaves them in a very poor position for monitoring the rest of the class, which violates basic principles of classroom management (Kounin, 1970). Recent experimental work suggests that this kind of reading group arrangement interferes not only with classroom management but also with student learning (Anderson, Evertson, & Brophy, 1979). Most teachers do not require such documentation, however, because the problem is intuitively obvious to them as soon as it is called to their attention. (At least, this has been my experience in mentioning it to many teachers over the last 10 years.) In each case, the teacher (1) had never thought about the matter and had never had it called to his or her attention; (2) recognized the problem immediately; and (3) made appropriate changes at once.

Not all bad habits are this easy to spot, nor are the needed changes always so clear. Sometimes, systematic feedback from classroom observation is needed to enable the teacher to see the problem more clearly and develop ideas about how to cope with it. Good and Brophy (1974) used this approach successfully in a treatment study that focused on teachers' patterns of calling on students and involving them in classroom discussions, and on their methods of dealing with students who failed to answer questions when they were called on.

During the baseline or data collection phase of the study, classroom observers noted the degree to which various students participated in classroom discussions. They also noted how the teachers responded when students who were called on to answer a question failed to respond or did not answer correctly. Between semesters, information from these observations was related to the teachers. They were shown that certain students rarely volunteered to participate and rarely were called on

as non-volunteers. The teachers also were shown that they easily gave up on certain students who failed to respond to questions correctly (they would give them the answer or call on someone else), whereas, with other students, they would rephrase the question, provide a clue, or in some other way stick with the student and try to elicit an improved response.

This feedback led to changes in teacher behavior toward both groups. The teachers began to call on the low-participation students much more frequently, and these students themselves began to initiate interactions with the teachers more often. The teachers began to ask more frequent and more difficult questions of the students they formerly gave up on easily, and to stay with these students to try to elicit an improved response when the question was not answered initially. In addition to these changes that were specific to the treatment, teacher behavior toward the treatment students (and in some ways toward the class in general) showed side effects (mostly positive) on other measures (more praise for good performance, less criticism and punishment for misbehavior, improvements in the consistency and quality of feedback given to students following their responses).

Other studies also suggest that teaching can be improved by providing teachers with feedback about their behavior (Moore, Schaut, & Fritzges, 1978; Tuckman, McCall, & Hyman, 1969; Withall, 1956). Some of these studies demonstrated that successful feedback does not always have to be based on fine-grained measurement of teacher behavior. For example, Gage, Runkel, and Chatterjee (Note 1) presented teachers with feedback from student ratings of such teacher actions as "acts disappointed when a pupil gets something wrong," or "explains arithmetic so pupils can understand it." Teachers examined their profiles individually to determine strengths and weaknesses and decide for themselves what needed

to be done. Data from a readministration of the student rating instrument later revealed significant improvement on 10 of the 12 behaviors rated. Most other reports on the use of student evaluation feedback to teachers also suggest that such evaluation is helpful in pinpointing problems for teachers.

Teachers profit not only from feedback about their own teaching behavior, but also from information about teacher behaviors that are effective for maximizing student learning of basic skills in the primary grades. In recent years, process-product studies -- in which measures of teacher and student behavior (classroom processes) were correlated with measures of student achievement (a major product or outcome of instruction) -- have revealed many replicated relationships between teacher behavior and student learning. Follow-up studies have produced significant positive results by integrating several teacher behaviors correlated with student achievement gains into a coherent experimental treatment to be tried by new groups of teachers. These have included teacher behaviors related to organizing and conducting reading groups in the first grade (Anderson et al., 1979), math instruction in fourth grade (Good & Grouws, in press), and behavioral management, instructional methods, questioning, and feedback in grade three (Program on Teaching Effectiveness, Note 2). Thus, in general, systematic observation of teacher behavior can produce valuable information, and sharing this information with teachers can help them improve their teaching.

Not all efforts to provide teachers with feedback from observation will necessarily produce good results, however. Sometimes, a teacher will need inservice education or training in addition to feedback,

because the teaching skills involved are complex.

Even where complex skills are not a problem, the value of feedback to a particular teacher will depend on its quality and presentation. Tuckman (1976) suggests the following principles: feedback should (1) involve specific, concrete behaviors or characteristics; (2) be credible and presented with good intentions and in understandable terms; (3) include specific guidelines for change; and (4) lead to a commitment to initiate specific changes.

Brophy and Good (1974) suggest several guidelines for using classroom observation to obtain information and for sharing this information in ways useful to teachers:

1. Collect behavioral data from the classroom.
2. Identify problems or possible focal areas for teacher development suggested by these data.
3. If possible, identify group or situational differences indicating that the teacher is more effective in one place than another, so that calls for change will involve extending existing behavior to new situations (or being more consistent) rather than switching to entirely new behaviors.
4. Describe the problem as you see it, but allow teachers to give explanations before suggesting changes (maybe there is a good reason for behavior that seems ineffective).
5. Pinpoint the differences in teacher behavior in contrasting situations more specifically and suggest specific changes.
6. If the teacher is agreeable, engage in mutual problem solving until explicit changes are agreed upon.
7. Specify exactly what the changes will be.
8. Arrange to get additional data to evaluate the degree to which the teacher has changed and to identify any possible effects, direct or indirect.
9. Hold a debriefing session to review the results of the study and reevaluate the suggested behavior.

Note the emphasis here on tailoring classroom observation to collect data on matters of interest to the teacher being observed. Many teachers immediately think of the observation approach developed by Flanders (1970) when they hear the term "classroom observation," but this is only one of more than 100 systems that have been developed (Simon & Boyer, Note 3). Furthermore, there is no need to rely on existing formal systems. Many resources are available for teachers who would like to collect systematic feedback from the classroom, but want to define their own areas of concentration and develop their own methods. Brandt (1972) provides a readable survey of naturalistic approaches to data collection, especially in schools. Boehm and Weinberg (1977) provide information and exercises designed to develop classroom observation skills in teachers. Rowen (1973) discusses the observational approach to child study, concentrating on case studies of individuals with learning or personality problems. Fuller and Baker (Note 4) discuss methods of using video tape to record teacher behavior and provide feedback and suggestions.

Detailed suggestions about classroom behaviors that can be measured and about methods of measuring them can be found in Good and Brophy's (1978) Looking in Classrooms. Topics include teacher and student behavior relevant to the communication of teacher expectations and attitudes (including possible self-fulfilling prophecy effects), teacher modeling of desirable behavior as a method of influencing student behavior, classroom organization and management, methods of coping with inattentiveness and disruption, grouping and individualized instruction, and a variety of topics derived from recent studies linking teacher behavior to student learning gains. A great many sample observation instruments are included, some that involve the counting of very discrete behaviors, others that involve integrating specific observations and drawing inferences in order

to use rating scales, and still others that involve free responses to specific questions about behaviors of interest. In addition, guidelines are given about how teachers, working individually or in collaboration with fellow teachers or their principal, can organize their own inservice education experiences by arranging for the collection of classroom data that relate to their particular interests or concerns.

When used in this way, classroom observation becomes a valuable tool for professional development, not just a research strategy. It has been used with considerable success and satisfaction by a great many individual teachers, but is perhaps most valuable when used cooperatively by groups of teachers (c.f. Martin, Note 5). Working as a group, teachers not only get useful feedback relevant to their individual interests, but begin to work together, sharing expertise and observations and breaking down the isolation that so often is a barrier to professional development, especially in the primary grades. Also, even teachers who differ considerably in experience and expertise can both make important contributions and get important assistance from this kind of an effort. Each teacher determines the focus of classroom observation when he or she is being observed, thus maximizing the value of the feedback, and by providing feedback to others, each teacher contributes to the professional development of colleagues and to the morale and effectiveness of the faculty group.

If teachers are willing to take seriously the notion that everyone's teaching can be improved, if the notion of designing their own inservice education program appeals to them, and, especially, if they have access to one or more likeminded colleagues, further investigation of ideas about using classroom observation data to provide feedback may be well worth their while.

Reference Notes

1. Gage, N., Runkel, P., & Chatterjee, B. Equilibrium theory and behavior change: An experiment in feedback from pupils to teacher. Urbana: Bureau of Educational Research, University of Illinois, 1960).

2. Program on Teaching Effectiveness. An experiment on teacher effectiveness and parent-assisted instruction in the third grade. Center for Educational Research at Stanford, Stanford University, 1978.

3. Simon, A., & Boyer, E. (Eds.). Mirrors for behavior: An anthology of observation instruments (2 vols.). Philadelphia: Research for Better Schools, Inc., 1970.

4. Fuller, F., & Baker, H. Counseling teachers: Using video feedback of their teaching behavior (Report # 0010). Research and Development Center for Teacher Education, University of Texas at Austin, 1970. (ERIC #ED 058 760).

5. Martin, M. Equal opportunity in the classroom ESEA, Title III: Session A report. Los Angeles: County Superintendent of Schools, Division of Compensatory and Intergroup Programs, 1973.

References

Anderson, L., Evertson, C., & Brophy, J. An experimental study of teaching effectiveness in first-grade reading groups. Elementary School Journal, 1979, 79, 193-223.

Boehm, A., & Weinberg, R. The classroom observer: A guide for developing observation skills. New York: Teachers College Press, 1977.

Brandt, R. Studying behavior in natural settings. New York: Holt, Rinehart & Winston, 1972.

Brophy, J., & Good, T. Teacher-student relationships: Causes and consequences. New York: Holt, Rinehart & Winston, 1974.

Flanders, N. Analyzing teacher behavior. Reading, Massachusetts: Addison-Wesley, 1970.

Good, T., & Brophy, J. Changing teacher and student behavior: An empirical investigation. Journal of Educational Psychology, 1974, 66, 390-405.

Good, T., & Brophy, J. Educational psychology: A realistic approach. New York: Holt, Rinehart & Winston, 1977.

Good, T., & Brophy, J. Looking in classrooms (2nd ed.). New York: Harper and Row, 1978.

Good, T., & Grouws, D. The Missouri Mathematics Effectiveness Project: An experimental study in fourth-grade classrooms. Journal of Educational Psychology, in press.

Jackson, P. Life in classrooms. New York: Holt, Rinehart & Winston, 1968.

Kounin, J. Discipline and group management in classrooms. New York: Holt, Rinehart & Winston, 1970.

Moore, J., Schaut, J., & Fritzges, C. Evaluation of the effects of feedback associated with a problem-solving approach to instruction on teacher and student behavior. Journal of Educational Psychology, 1978, 70, 200-208.

Rowen, B. The children we see: An observational approach to child study. New York: Holt, Rinehart & Winston, 1973.

Tuckman, B. Feedback and the change process. Phi Delta Kappan, 1976, 57, 341-344.

Tuckman, B., McCall, K., & Hyman, R. The modification of teacher behavior: Effects of dissonance and coded feedback. American Educational Research Journal, 1969, 6, 607-619.

Withall, J. An objective measurement of a teacher's classroom interaction. Journal of Educational Psychology, 1956, 47, 203-212.

PUBLICATIONS

of the

Institute for Research on Teaching
Michigan State University

as of

February 1, 1979

To order any of the following publications please send check, money order, or prepaid purchase order -- payable to Michigan State University -- to: IRT Publications, 252 Erickson, MSU, East Lansing, MI 48824. Publication prices include only the cost of production and mailing. Michigan residents should add a 4% state sales tax to all orders. The Institute for Research on Teaching is funded primarily by the National Institute of Education, United States Department of Health, Education, and Welfare.

Research Series

No. 1 The Inquiry Theory: An information-processing approach to clinical problem-solving research and application. J.F. Vinsonhaler, C.C. Wagner, & A.S. Elstein. 1978. $2.00

No. 2 Impact on what? The importance of content covered. A.C. Porter, W.H. Schmidt, R.E. Floden, & D.J. Freeman. 1978. $1.75

No. 3 Instructions for using the AJ 832 plotting software package as modified for the CDC 6500 computer. M. Carlyn. 1977. $1.75

No. 4 Training manual for the classification of the content of fourth-grade mathematics. W.H. Schmidt, A.C. Porter, R.E. Floden, & D.J. Freeman. 1978. $2.25

No. 5 Flexner, accreditation, and evaluation. R.E. Floden. 1978. $1.75

No. 6 Analogy and credentialling. R.E. Floden. 1978. $1.25

No. 7 Conceptions of reading: The Rep Test. M. Johnston. 1978. $1.00

No. 8 Research and development needs for the advancement of teacher education. J.E. Lanier & R.E. Floden. 1978. $3.00

No. 9 On the conceptualization of clinical problem solving. C.C. Wagner & J.F. Vinsonhaler. 1978. $1.50

* No. 10 Applications of the inquiry theory to reading and learning disabilities. L. Patriarca, J. VanRockel, & J.F. Vinsonhaler. 1979.

No. 11 Methods for discovering cues used by judges: Two working papers. C.M. Clark & R.J. Yinger. 1978. $1.00

No. 12 Research on teacher thinking. C.M. Clark & R.J. Yinger. 1978. $2.25

No. 13 Data analysis strategies for quasi-experimental studies where differential group and individual growth rates are assumed. S. Olejnik. 1978. $2.75

No. 14 CLIPIR Pilot Observational Study of Reading Diagnosticians, 1976. A. Lee & A. Weinshank. 1978. $2.00 (with complete data, $5.75)

No. 15 The Inquiry Theoretic approach to clinical problem-solving research and application: Basic Management Information System (BMIS) technical manual Vol. 1. J.F. Vinsonhaler, C.C. Wagner, A.S. Elstein, & L.S. Shulman. 1978. $4.50

No. 16 The user's manual for the Basic Management Information System: BMIS technical manual Vol. 2. C.C. Wagner, J.F. Vinsonhaler, A.S. Elstein, & L.S. Shulman. 1978. $17.00

No. 17 Teachers' conceptions of reading: The evolution of a research study. R. Barr & G.G. Duffy. 1978. $1.25

No. 18 A study of teacher planning: Description and model of preactive decision making. R.J. Yinger. 1978. $4.25

No. 19 Fieldwork as basis for theory building in research on teaching. R.J. Yinger. 1978. $2.25

No. 20 Choice of a model for research on teacher thinking. C.M. Clark. 1978. $1.50

No. 21 Conceptual issues in the content/strategy distinction. D.J. Freeman. 1978. $2.25

No. 22 An econometric perspective on classroom reading instruction. B.W. Brown & D.H. Saks. 1978. $1.75

No. 23 Identifying cues for use in studies of teacher judgment. C.M. Clark, R.J. Yinger, & S.C. Wildfong. 1978. $1.75

No. 24 Teacher autonomy and the control of content taught. A.C. Porter. 1978. $3.75

No. 25 Don't they all measure the same thing? Consequences of standardized test selection. R.E. Floden, A.C. Porter, W.H. Schmidt, & D.J. Freeman. 1978. $1.50

* No. 26 Critical moments in the teaching of mathematics. J.C. Shroyer. 1978.

No. 27 Characteristics of the clinical problem-solving model and its relevance to educational research. (Formerly available as an IRT collateral paper.) A.S. Elstein, L.S. Shulman, J.F. Vinsonhaler, C.C. Wagner, & L. Bader. 1978. $1.25

* No. 28 The consistency of reading diagnosis. A. Weinshank. 1978.

* No. 29 The Inquiry Theory research paradigm. C.C. Wagner. 1978.

* No. 30 Simulating the problem solving of reading clinicians. J.F. Vinsonhaler. 1978.

* No. 31 Training reading specialists in diagnosis. G. Sherman. 1978.

No. 32 Classroom management in the elementary grades. J.E. Brophy & J.C. Putnam. 1978. $3.25

No. 33 An ethnographic study of a teacher's classroom perspective: Implications for curriculum. V.J. Janesick. 1978. $2.25

No. 34 The problem of dead letters: Social perspectives on the teaching of writing. S. Florio. 1978. $1.50

No. 35 Measuring content of instruction. W.H. Schmidt. 1978. $1.50

* No. 36 The relationship of teacher alienation to school workplace characteristics and career stages of teachers. M.J. Vavrus. 1978. $2.50

No. 37 The relationship between diagnosis and remediation in reading: A pilot study. A. Weinshank. 1978. $1.75

* No. 38 Teacher judgment of children's reading preferences. T.E. Evans & J.L. Byers. 1979. $2.00

* No. 39 The teaching styles at South Bay School. B. Joyce. 1979. $2.25

* No. 40 Teachers' thoughts while teaching. B. Joyce. 1979. $2.25

* No. 41 Measuring teachers' conceptions about reading. G.G. Duffy & W. Metheny. 1979. $1.75

* No. 42 Studies of clinical problem-solving behavior in reading diagnosis. D. Gil, J.F. Vinsonhaler, & C.C. Wagner. 1979. $2.00

* No. 43 Study of the value/belief patterns of teachers and administrators. P. Cusick. 1979.

No. 44 Teacher perceptions of student affect. R.S. Prawat. 1979. $2.50

Occasional Papers

No. 1 Teachers' concerns and conceptions of reading and the teaching of reading: A literature review. G. Belli, G. Blom & A. Reiser. 1977. Limited number of free copies.

No. 2 Teachers and researchers: Toward a proper division of labor. C. Kennedy. 1977. Limited number of free copies.

No. 3 A causal analysis of attitudes toward leadership training in a classroom setting. J.E. Hunter, R.F. Hunter & J.E. Lopis. 1978. $2.00

* No. 4 The teacher as colleague in classroom research. S. Florio & M. Walsh. 1978.

No. 5 Form and function in mother-toddler conversational turn-taking. M.L. Donahue. 1978. $1.75

No. 6 Individual school buildings do account for differences in measured pupil performance. L.W. Lezotte & J. Passalacqua. 1978. $1.25

No. 7 Research on teaching: A dynamic area of inquiry. J.E. Lanier. 1978. $1.25

No. 8 Test design: A view from practice. L.S. Shulman. 1978. $1.75

No. 9 Relationships between testing and curriculum. A.C. Porter. 1978. $1.00

No. 10 Psychology and mathematics education revisited: 1976. L.S. Shulman. 1978. $1.75

No. 11 Science and mathematics education: Retrospect and prospect. L.S. Shulman & P. Tamir. 1978. $2.00

No. 12 Relating theory to practice in educational research: A working paper. L.S. Shulman. 1978. $1.75

No. 13 Classroom discipline: Toward a diagnostic model integrating teachers' thoughts and actions. D. Gil & P.S. Heller. 1978. $1.00

No. 14 Attention and modality effects in STM: A second look. T.Evans & J. Byers. 1978. $1.75

* No. 15 Mere ethnography: Some problems in its use in educational practice. F. Erickson. 1979. $2.00

* No. 16 On standards of descriptive validity in studies of classroom activity. F. Erickson. $2.00

* No. 17 Changes in school characteristics coincident with changes in student achievement. W.B. Brookover, & L.W. Lezotte. 1979. $5.00 (Executive Summary $1.00)

Conference Series

No. 1 Current directions in research on teaching: A meeting of the Invisible College of Researchers on Teaching, November 17-19, 1976. 1977. $4.25

No. 2 Report of a seminar on field research methods in education. P.A. Cusick. 1978. $1.50

No. 3 Proceedings of the Research-on-Teaching Mathematics Conference, May 1-4, 1977. 1978. $8.25

4 Teachers attaining new roles in research: A challenge for the education community. L.D. Shalaway, J.E. Lanier et al. 1978. $3.50

---

*In production and will be available by May 1979. Please write for exact price and publication date.